

Remarks

Although Applicant's Attorney does not necessarily agree with the Examiner's September 5, 2006 characterization of the telephonic interview, Applicant's Attorney did find the interview useful.

Applicant's Attorney amended claims 1 and 21. No new matter was added:

At this frequency, ultrasonic absorption is minimal. However, the radiation force on the microbubble can be significant since it is an ideal acoustic reflector. Radiation forces at reasonable ultrasonic intensities can easily reach the nNewton-to- μ Newton level at the microbubble surface. Very small radiation forces at the pNewton or fNewton levels can also be produced simply by reducing the ultrasonic intensity. Consequently, under remote control this approach can provide a wide dynamic range of forces to individual cells and subcellular components in contact with the microbubble.

P. 6, ll. 19-26.

The microbubble will move in the direction of the ultrasound beam. In this way, a force of known magnitude and direction can be remotely applied to the cell.

P. 7, ll. 20-22.

A pair of ultrasound sources positioned about the light fiber propagate acoustic energy in the form of acoustic waves in the medium to force the microbubble against a surface of a substrate or other structure such as for patterning.

P. 8, ll. 7-10.

Maximal microbubble displacements of 330 μ m, 124 μ m, and 48 μ m have been measured in response to pulsed excitation in 5%, 7.5% and 10% gelatin phantoms, respectively. Alternatively, maximal microbubble displacements of 423 μ m, 140 μ m, and 60 μ m have been measured in response to a single

6.7 ms ultrasound burst in 5%, 7.5% and 10% gelatin phantoms, respectively. These results demonstrate that microbubble displacement induced by acoustic radiation force is directly related to the gelatin concentration and, therefore, the elasticity of the surrounding medium.

P. 10, ll. 14-21.

Amended claims 1 and 21 are patentable over U.S. Patent No. 5,523,058 (Umemura). Umemura fails to propagate at least one acoustic wave through a material to exert a force at an exterior surface of the microbubble to displace a central portion of the microbubble within the material. Rather, Umemura discloses “enlargement and reduction [of a bubble] within a size range of from b2 to b1.” Col. 7, ll. 44-46.

Claims 2, 4-8, 11-15, and 18-20 depend from claim 1. Claims 23-24, 27-29, 36, and 40 depend from claim 21. For at least the reasons claims 1 and 21 are patentable, claims 2, 4-8, 11-15, 18-20, 23-24, 27-29, 36, and 40 are patentable.

Applicant’s Attorney believes the claims are in a condition for allowance. A notice to that effect is respectfully requested. Applicant’s Attorney also invites a telephone conference if the Examiner believes it will advance the prosecution of the case.

Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

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